REMARKS

Twenty-one claims were originally filed in this case, and all claims were rejected in the first office action. With this amendment, Applicant has amended claims 1, 6 and 12. Reconsideration of the application in view of the above changes and the following remarks is respectfully requested.

Applicant acknowledges the application has been filed with informal drawings that are acceptable for examination purposes, and acknowledge the objections of the draftsperson noted on form PTO-968. Upon an indication of allowable subject matter, Applicant will submit formal drawings eliminating the draftsperson's objections.

Applicant notes that an information disclosure statement was filed in the present case on November 3, 1999 to disclose prior art revealed by a corresponding PCT application. Applicant requests that this art be made of record in the present case.

In paragraph 2, the Examiner rejected claims Claims 1-21 under 35 U.S.C. 103(a) as being unpatentable over Accad (U.S Patent No.5,553,200). In particular, the Examiner notes that Accad teaches a method for dithering color in a graphics system that displays a group of pixels with less than eight bits, and including the steps of: generating an eight bit color shade for each pixel representing the desired color for the pixel (col.7, lines 60-64); truncating the desired eight bit color shade to obtain a truncated color shade (col.8, lines 4-8); generating FRAC and ramp value I"(i, j) for each pixel; and using the ramp value to select a color shade value of fewer than eight bits that determines the color of each pixel (col. 12, lines 48-60 and col. 13, lines 21-36). The Examiner notes that Accad does not teach a binary ramp value and selecting one bit in the ramp value to determine the color shade of less than eight bits for each pixel, but contends it

would have been obvious to a person of ordinary skill in the art at the time the invention was made.

Applicants have amended claims 1, 6 and 12 to include a similar recitation of using the FRAC value to select one from a group of plurality of ramp values having different probabilities reflecting proximity to the truncated color shade value, which is not taught or suggested by the art of record. In particular, claim 1 now recites:

> 1. A method for dithering color in a graphics system that displays a group of pixels and wherein the color of the pixels is represented by color shades having fewer than eight bits, the method comprising the steps of:
>
>> (a) generating an eight bit color shade value for each pixel representing a desired color for each pixel;
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>> (b) truncating the desired eight bit color shade value to obtain a truncated color shade value;
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>> (c) generating a FRAC value for each pixel from the truncated bits of said eight bit color shade value;
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>> (d) producing a ramp value for each pixel **using said FRAC value to select one from a group of plurality of ramp values having different probabilities reflecting proximity to the truncated color shade value,** wherein said ramp value encodes a discrepancy between the desired eight bit color shade value and the truncated color shade value; and
>>
>> (e) using a bit from said ramp value to select a color shade value of fewer than eight bits that determines the color of each pixel. (emphasis added.)

The claimed invention is particularly advantageous because it uses a ramp value that encodes a discrepancy between the desired eight bit color shade value and the truncated color shade value. Still more particularly, the present invention takes advantage of probability in selection in conjunction with a ramp function, and uses the fractional value lost by bit reduction to select a ramp value that has a higher probability of yielding a more accurate color shade from the reduced bit values. This advantageously accomplishes two functions simultaneously. First, a dithering function that introduces randomness, and second mixing of the color shades for

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dithering in a way that will reflect the lost shades between two sucessive five bit color shades. The claimed invention also produces a device and method that are elegant, simple, and easy and computationally inexpensive to implement. Based on these differences between the claimed invention and Accad, Applicant submits that the claimed invention is patentably distinct.

Applicant submits that the Examiner's analysis of the teachings of Accad is flawed. First, Applicant submits that just because the claimed invention and Accad address the same problem, it does not make the claimed invention obvious. The Examiner contends that one skilled in the art would recognize that the I"(i, j) value is, in fact, the claimed FRAC value which is expressed in decimal form and is normalized, and that Accad suggests that by matching the I"(i, j) with the threshold array provides the same purpose of determining color shade value of less than eight bits for the pixels as the claimed FRAC and ramp value would perform. Applicants have amended the claims as noted above to distinguish the claimed invention from the line of reason set forth by the Examiner. Accad teaches nothing about use of probabilities to get a proximity relationship when encoding the shading values. Moreover, just because Accad and the claimed invention address the same problem, the claimed invention is not obvious because the claimed solution is different from that proposed by Accad.

Second, the truncation claimed is different that taught by Accad. The claimed truncation is just that and provides a simple and elegant solution to getting a base color value. In contrast, the Accad proposes many addition computational steps, encoding using an index and only then truncating the index. This is much different than the claimed step.

Third, Accad teaches nothing similar to the generation of the ramp value. As now recited the ramp value is one of a plurality of probabilities related to the proximity in shading to the truncated color value. Furthermore, the ramp value is a based on part on the fractional value and

the location of the pixel as generated through use of the look up table. There is no such similar teaching in Accad to provide a value that is the combination or result of these two signals. Therefore, Applicants submit that claims 1, 6, and 12 are patentably distinct over the prior art.

Claims 2-5, 7-11 and 13-21 depend, either directly or indirectly from claims 1, 6 and 12, respectively. Claims 2-5, 7-11 and 13-21 also include recitations that further defined the claimed invention. Based on their dependence on claim 1, 6, or 12, respectively, and other patentable recitations, claims 2-5, 7-11 and 13-21 are also believed to be patentable. Thus, allowance of claims 1-21 is respectfully requested.

Applicant respectfully requests a three-month extension of time in responding to the above-identified office action and has also enclosed a check for the requisite fee for the three-month extension of time in responding to the above-identified office action.

In view of the foregoing arguments, Applicant respectfully submits that the claims presently in this case are now in condition for allowance. Reconsideration and prompt favorable action are therefore solicited.

Respectfully submitted,
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